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EXAMINER	
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ART UNIT	**PAPER NUMBER**
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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/418,397	WHITFIELD ET AL.	
	Examiner	Art Unit	
	Donald L Mills	2662	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *17 February 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-81* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-81* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 22-81 rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claims 22, 26, 29, 30, 34, 37, 38, 43, 46, 47, 50, 51, 52, 55, 56, 61, 64, 65, 69, 70, 75, 76, and 81, the term "portion" is a relative term which renders the claim indefinite. The term "portion" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. The sampling size of the audio signal has been rendered indefinite by the use of the term portion.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claims 1, 5, 8, and 22-81 are rejected under 35 U.S.C. 102(e) as being anticipated by Arnaud et al. (US 6,650,662 B1), herein after referred to as Arnaud.

Regarding claim 1, Arnaud discloses a method and apparatus for transmitting DTMF signals, which comprises:

Examining audio signals for potential DTMF signals (Referring to Figure 2, receiving a voice traffic signal and detecting a DTMF signal. See column 5, lines 22-25.)

Preparing the audio signals for transmission as digital packets (Referring to Figure 2, traffic is assembled in packets **(205)** and transmitted. See column 5, lines 34-35.)

While no potential DTMF signals have been detected, promptly transmitting a digital packet after sufficient time has elapsed for a potential DTMF signal to be detected in the digital packet (Referring to Figure 7, when no DTMF signal is pre-detected the voice traffic is transmitted after a delay. See column 5, lines 61-62.)

If a potential DTMF signal is detected, storing the digital packets and stalling transmission of stored digital packets until DTMF detection can be performed (Referring to Figures 2 and 12, DTMF detector **(203)** detects and validates DTMF signals, inherently requiring the storing of packets and intrinsically delaying the transmission of the stored packets until validation is completed, in order to process the packets. See column 5, lines 26-28,) *and if the potential DTMF signal does not result in a DTMF detection, promptly transmitting the digital packets* (Referring to Figure 7, when no DTMF signal is pre-detected the voice traffic is transmitted after a delay. See column 5, lines 61-62,) *and if the potential DTMF signal does result in a DTMF detection, discarding the stored digital packets and transmitting a control packet containing information relating to characteristics of a DTMF signal that was detected*

(Referring to Figures 2 and 9b, after the DTMF Detector **(203)** has determined that a candidate DTMF signal is a true DTMF signal, the DTMF signal is coded for transmission, comprising the DTMF signal characteristics. See column 5, lines 42-46 and 65-67.)

Regarding claim 5, Arnaud discloses *wherein the audio signals include digitized representations of voice signals* (Referring to Figure 2, traffic is assembled in packets **(205)**. See column 5, lines 34-35.)

Regarding claim 8, Arnaud discloses *examining the audio signals for potential DTMF signals using digital signal processing* (Referring to Figure 2, receiving a voice traffic signal and detecting a DTMF signal, which inherently comprises digital signal processing in order to determine if a digital packet is a DTMF signal. See column 5, lines 22-25.)

Regarding claims 22, 30, and 38, Arnaud discloses a method for early detection of DTMF signals, which comprises:

Sampling/A sampler capable of sampling a portion of the audio signal to generate a plurality of samples (Referring to Figure 1, a signal coming from a 64 kbps channel **(200)** includes voice traffic and DTMF signals, inherently comprising sampling a voice signal from telephone set **(100)**. See column 5, lines 24-25.)

Digitizing/A digitizer capable of digitizing the plurality of samples to generate a plurality of digitized samples (Referring to Figure 1, a signal coming from a 64 kbps channel **(200)** includes voice traffic and DTMF signals, inherently comprising digitizing the voice samples from telephone set **(100)**. See column 5, lines 24-25.)

Detecting/A detector capable of detecting an energy indicative of the first frequency tone in the portion/Analyzing a portion of the audio signal to detect an element indicative of the

DTMF (Referring to Figure 2, a DTMF detector **(203)** detects candidate DTMF signals. See column 5, lines 25-26.)

Stalling/A processor capable of stalling the transmission of the digitized samples in response to the detecting/Stalling the transmission of the portion if the analyzing detects the element, else continuing the transmission of the portion (Referring to Figure 12, DTMF detector **(203)** detects and validates DTMF signals, inherently requiring the storing of packets and intrinsically delaying the transmission of the stored packets until validation is completed, in order to process the packets. See column 5, lines 26-28.)

Confirming the sample includes the DTMF signal/Processing the portion, in response to the stalling, to confirm the portion includes the DTMF signal (Referring to Figure 12, DTMF detector **(203)** validates DTMF signals. See column 5, lines 26-28.)

Generating/Wherein the processor is further capable of generating a packet indicative of the DTMF signal, discarding the digitized samples and transmitting the packet, in response to the confirming/Discarding the portion, generating a packet indicative of the DTMF signal and transmitting the packet if the processing confirms the portion includes the DTMF signal, else continuing the transmission of the portion (Referring to Figures 2 and 9b, after the DTMF Detector **(203)** has determined that a candidate DTMF signal is a true DTMF signal, the DTMF signal is coded for transmission, comprising the DTMF signal characteristics. See column 5, lines 42-46 and 65-67.)

Regarding claim 23, 31, 40, 49, 60, 61, 69, 72, 75, 78, and 81 Arnaud discloses *wherein the first frequency is/confirms existence of a high frequency and the second frequency is a low*

frequency (Referring to Figure 3, the detector checks for the presence of a frequency from a high group and a low group. See column 6, lines 39-41.)

Regarding claim 24, 32, 41, 50, 58, 67, 73, and 79, Arnaud discloses *wherein the detecting uses a wideband energy detector* (Referring to Figure 3, the detector must detect DTMF signals in a predefined range of energy levels. See column 6, lines 48-49.)

Regarding claim 25, 33, 42, 51, 59, 68, 74, and 80, Arnaud discloses *wherein the detecting compares the energy with a high threshold and a low threshold* (Referring to Figure 3, the detector must detect DTMF signals in a predefined range of energy levels and a non-operation level, below which a DTMF signal must not be detected. See column 6, lines 48-51.)

Regarding claim 26, 34, 43, and 52, Arnaud discloses *wherein the conforming confirms an existence of the first frequency and the second frequency in the portion* (Referring to Figure 12, DTMF validating **1206** inherently confirms the existence of a first and second frequency when verifying the presence of a DTMF signal.)

Regarding claim 27, 35, 44, 53, and 62, Arnaud discloses *wherein the confirming confirms a frequency tolerance of each tone* (Referring to Figure 3, DTMF detector detects frequencies with a tolerance of 1.8% of their nominal value. See column 6, lines 42-43.)

Regarding claim 28, 36, 45, 54, and 63, Arnaud discloses *wherein the confirming confirms a frequency deviation of each tone* (Referring to Figure 3, the DTMF detector does not respond to signals whose duration is less than a specified value. See column 6, lines 64-67.)

Regarding claim 29, 37, 46, 55, and 64, Arnaud discloses *wherein the confirming confirms a twist in the portion* (Referring to Figure 3, the DTMF detector detects when the two frequencies are received at different power levels, called a twist. See column 6, lines 52-57.)

Regarding claims 39, 48, 57, 66, 71, and 77, Arnaud discloses *wherein the element is an energy of the first frequency* (Referring to Figure 3, the detector must detect DTMF signals in a predefined range of energy levels and a non-operation level, below which a DTMF signal must not be detected. See column 6, lines 48-51.)

Regarding claim 47, Arnaud discloses a method for early detection of DTMF signals, which comprises:

A processor capable of analyzing a portion of the audio signal to detect an element indicative of the DTMF wherein the processor stalls the transmission of the portion if the processor detects the element, else the processor continues the transmission of the portion (Referring to Figure 12, storing **(1210)**, intrinsically delaying the transmission of the stored packets until validation is completed, then identifying **(1206)** within said pre-detected DTMF signals, true DTMF signals from voice traffic, if voice traffic exists transmitting such traffic, and validating true DTMF signals. See column 13, lines 28-30.)

Wherein the processor processes the portion, in response to the stalling, to confirm the portion includes the DTMF signal (Referring to Figure 12, storing **(1210)**, intrinsically delaying the transmission of the stored packets until validation is completed, then identifying **(1206)** within said pre-detected DTMF signals, true DTMF signals from voice traffic, if voice traffic exists transmitting such traffic, and validating true DTMF signals. See column 13, lines 28-30,) *and wherein the processor discards the portion, generates a packet indicative of the DTMF signal and transmits the packet if the processor confirms the portion includes the DTMF signal, else the processor continues the transmission of the portion* (Referring to Figure 12, coding **(1207)** validated DTMF signals; building **(1208)** coded DTMF signal packets with said coded

true DTMF signals; transmitting **(1209)** said coded DTMF signal packets; and transmits voice traffic when detected **(1206)**. See column 13, lines 33-38.)

Regarding claims 56, 65, and 70, Arnaud discloses a method for early detection of DTMF signals, which comprises:

Detecting/Means for/Code for detecting an element indicative of the DTMF (Referring to Figure 2, a DTMF detector **(203)** detects candidate DTMF signals. See column 5, lines 25-26.)

Stalling/Means for/Code for stalling the transmission of the portion, in response to the detecting (Referring to Figure 12, DTMF detector **(203)** detects and validates DTMF signals, inherently requiring the storing of packets and intrinsically delaying the transmission of the stored packets until validation is completed, in order to process the packets. See column 5, lines 26-28.)

Confirming/Means for/Code for confirming the portion includes the DTMF signal (Referring to Figure 12, DTMF detector **(203)** validates DTMF signals. See column 5, lines 26-28.)

Discarding/Means for/Code for discarding the portion, generating a packet indicative of the DTMF signal and transmitting the packet, in response to the confirming (Referring to Figures 2 and 9b, after the DTMF Detector **(203)** has determined that a candidate DTMF signal is a true DTMF signal, the DTMF signal is coded for transmission, comprising the DTMF signal characteristics. See column 5, lines 42-46 and 65-67.)

Regarding claim 76, Arnaud discloses a method for early detection of DTMF signals, which comprises:

A detector capable of detecting an element indicative of the DTMF (Referring to Figure 2, a DTMF detector **(203)** detects candidate DTMF signals. See column 5, lines 25-26.)

A processor capable of stalling the transmission of the portion, in response to the detector detecting the element indicative of the DTMF confirming the portion includes the DTMF signal discarding the portion (Referring to Figures 2 and 12, DTMF detector **(203)** detects and validates DTMF signals, inherently requiring the storing of packets and intrinsically delaying the transmission of the stored packets until validation is completed, in order to process the packets. See column 5, lines 26-28,) *generating a packet indicative of the DTMF signal and transmitting the packet* (Referring to Figures 2, 9b, and 12, after the DTMF Detector **(203)** has determined that a candidate DTMF signal is a true DTMF signal, the DTMF signal is coded for transmission, comprising the DTMF signal characteristics and transmitted to the destination node. See column 5, lines 42-46 and 65-67.)

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 2-4, 6, 7, 9, 10, and 17-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Arnaud et al. (US 6,650,662 B1), herein after referred to as Arnaud, in view of Kozdon et al. (US 6,385,192 B1), hereinafter referred to as Kozdon.

Regarding claim 2 as explained above in the rejection statement of claim 1, Arnaud discloses all of the claim limitations of claim 1 (parent claim). Arnaud does not disclose *preparing the audio signals for transmission as RTP packets.*

Kozdon teaches placing the compressed telephone signals and codes representing the DTMF onto virtual channels of a real time protocol (RTP) data stream (See column 5, lines 11-15.)

It would have been obvious to one of ordinary skill in the art at the time the invention was made to implement the method of Arnaud in the system of Kozdon. One of ordinary skill in the art would have been motivated to do so in order to transmit real time protocol traffic and DTMF signals with only features essential for reconstituting the DTMF signal as taught by Arnaud (See column 4, lines 20-21.)

Regarding claim 3 as explained above in the rejection statement of claim 1, Arnaud discloses all of the claim limitations of claim 1 (parent claim). Arnaud does not disclose *transmitting the digital packets over an IP network.*

Kozdon teaches transmitting voice signals, digitally packetized, on a computer network **112** such as the Internet (See column 5, lines 5-9.)

It would have been obvious to one of ordinary skill in the art at the time the invention was made to implement the method of Arnaud in the system of Kozdon. One of ordinary skill in the art would have been motivated to so in order to transmit DTMF signals with only features essential for reconstituting the DTMF signal in an IP network as taught by Arnaud (See column 4, lines 20-21.).

Regarding claim 4 as explained above in the rejection statement of claim 1, Arnaud discloses all of the claim limitations of claim 1 (parent claim). Arnaud does not disclose *transmitting the RTP packets over an IP network.*

Kozdon teaches placing the compressed telephone signals and codes representing the DTMF onto virtual channels of a real time protocol (RTP) data stream (See column 5, lines 11-15.) Kozdon further teaches transmitting voice signals, digitally packetized, on a computer network **112** such as the Internet (See column 5, lines 9-10.)

It would have been obvious to one of ordinary skill in the art at the time the invention was made to implement the method of Arnaud in the system of Kozdon. One of ordinary skill in the art would have been motivated to do so in order to transmit real time protocol traffic and DTMF signals with only features essential for reconstituting the DTMF signal in an IP network as taught by Arnaud (See column 4, lines 20-21.)

Regarding claims 6 and 7, the primary reference further discloses *wherein the audio signals include digitized representations of voice signals* (Referring to Figure 2, traffic is assembled in packets **(205)**. See column 5, lines 34-35.)

Regarding claims 9 and 10, the primary reference further discloses *examining the audio signals for potential DTMF signals using digital signal processing* (Referring to Figure 2, receiving a voice traffic signal and detecting a DTMF signal, which inherently comprises digital signal processing in order to determine if a digital packet is a DTMF signal. See column 5, lines 22-25.)

Regarding claims 17, Arnaud discloses a method and apparatus for transmitting DTMF signals, which comprises:

Processing digital representations of audio signals to detect potential DTMF signals (Referring to Figure 2, receiving a voice traffic signal and detecting a DTMF signal. See column 5, lines 22-25.)

In a first mode of operation while no potential DTMF signal has been detected:

(a) preparing the digital representations of audio signals for transmission as packets

(b) transmitting a packet over a network after a predetermined period of time sufficient to allow the step of processing digital representations of audio signals to detect potential DTMF signals to be completed for the packet (Referring to Figure 7, when no DTMF signal is pre-detected the voice traffic is transmitted after a delay, which inherently comprises preparing the signal for transmission. See column 5, lines 61-62.)

In a second mode of operation when a potential DTMF signal has been detected, preparing the digital representations of audio signals for potential transmission as packets, storing the packets and stalling transmission of stored packets while the potential DTMF signal is processed to verify whether it is a valid DTMF signal (Referring to Figures 2 and 12, DTMF detector **(203)** detects and validates DTMF signals, inherently requiring the storing of packets and intrinsically delaying the transmission of the stored packets until validation is completed in order to process the packets. See column 5, lines 26-28;)

(a) if the potential DTMF signal is determined to not be a valid DTMF signal, transmitting the stored packets over a network (Referring to Figure 7, when no DTMF signal is pre-detected the voice traffic is transmitted after a delay. See column 5, lines 61-62;)

(b) if the potential DTMF signal is determined to be a valid DTMF signal; discarding the stored packets, preparing a control packet containing information indicative of characteristics of a DTMF signal, and transmitting the control packet over a network (Referring to Figures 2 and 9b, after the DTMF Detector **(203)** has determined that a candidate DTMF signal is a true DTMF signal, the DTMF signal is coded for transmission, comprising the DTMF signal characteristics. See column 5, lines 42-46 and 65-67.) Arnaud does not disclose *RTP packets* and *IP network.*

Kozdon teaches placing the compressed telephone signals and codes representing the DTMF onto virtual channels of a real time protocol (RTP) data stream (See column 5, lines 11-15.) Kozdon further teaches transmitting voice signals, digitally packetized, on a computer network **112** such as the Internet (See column 5, lines 9-10.)

It would have been obvious to one of ordinary skill in the art at the time the invention was made to implement the method of Arnaud in the system of Kozdon. One of ordinary skill in the art would have been motivated to do so in order to transmit real time protocol traffic and DTMF signals with only features essential for reconstituting the DTMF signal in an IP network as taught by Arnaud (See column 4, lines 20-21.)

Regarding claim 18 as explained above in the claim rejection of claim 17, Arnaud and Kozdon disclose all of the claim limitations of claim 17 (parent claim). Arnaud further discloses a method and apparatus for transmitting DTMF signals, which comprises:

Receiving the packets at a remote location coupled to a network (Referring to Figure 2, a Receiver Interface **(207)** receives incoming packets at the other side of the network. See column 5, lines 53-54.)

Decoding the packets to recover digital representations of audio signals (Referring to Figure 2, voice decompression system **(208)** decompresses voice packets. See column 5, lines 56-57.)

Converting digital representations of audio signals to analog signals (Referring to Figure 2, voice signal is sent to the end user. See column 5, lines 58-60.)

Receiving a control packet at a remote location couple to the network (Referring to Figure 2, coded DTMF packets are received at the Receiver Interface **(207)**. See column 5, lines 53-56.)

Generating DTMF signals having characteristics determined by information contained in the control packets (Referring to Figure 2, the corresponding DTMF packets are sent to a DTMF generator **(209)** then sent to the end user. See column 5, lines 54-60.) Arnaud does not disclose *RTP packets* or *IP network.*

Kozdon teaches placing the compressed telephone signals and codes representing the DTMF onto virtual channels of a real time protocol (RTP) data stream (See column 5, lines 11-15.) Kozdon further teaches transmitting voice signals, digitally packetized, on a computer network **112** such as the Internet (See column 5, lines 9-10.)

It would have been obvious to one of ordinary skill in the art at the time the invention was made to implement the method of Arnaud in the system of Kozdon. One of ordinary skill in the art would have been motivated to do so in order to transmit real time protocol traffic and DTMF signals with only features essential for reconstituting the DTMF signal in an IP network as taught by Arnaud (See column 4, lines 20-21.)

Regarding claim 19, Arnaud discloses a method and apparatus for transmitting DTMF signals, which comprises:

A telephony interface (Referring to Figure 1, a telephone set **(100)**. See column 5, lines 4-5.)

A digital processor coupled to the telephony interface for processing digital representations of audio signals to detect potential DTMF signals (Referring to Figure 2, receiving a voice traffic signal and detecting a DTMF signal, inherently utilizing a processor to process packets. See column 5, lines 22-25.)

A microcontroller coupled to the digital processor, the microcontroller being operative to prepare the digital representations of audio signals for transmission as packets

Memory coupled to the microcontroller for temporarily storing packets (Referring to Figure 7, when no DTMF signal is pre-detected the voice traffic is transmitted after a delay, which inherently comprises a processor for preparing the signal for transmission and memory for storing the packets. See column 5, lines 61-62.)

A control register coupled to the digital processor and readable by the microcontroller, the control register including a flag bit indicative of the status of detection of a potential DTMF signal, the control register including one or more flag bits indicative of the detection of a valid DTMF signal (Referring to Figure 2, DTMF Detector **(203)** determines if the candidate DTMF signal is a true DTMF signal and not voice traffic, which inherently utilizes a memory to indicate the status of the received signal which is read by a processor. See column 5, lines 43-45.)

A network interface coupled to the microcontroller for coupling packets to a network (Referring to Figure 1, a telephone set **(100)** is linked via a subscriber line to a network,

inherently comprising a network interface to transmit packets between sources. See column 5, lines 3-5.)

Wherein when the flag bit indicative of the status of detection of a potential DTMF signal is not set, the packets are promptly coupled to the network interface for transmission over the network (Referring to Figure 7, when no DTMF signal is pre-detected the voice traffic is transmitted after a delay, which inherently comprises preparing the signal for transmission. See column 5, lines 61-62,) *and when the flag bit indicative of the status of detection of a potential DTMF signal is set, the packets are stored in the memory and transmission of stored packets are stalled while the digital processor performs additional DTMF detection processing* (Referring to Figures 2, 9b, and 12, after the DTMF Detector **(203)** has determined that a candidate DTMF signal is a true DTMF signal, inherently requiring the storing of packets and intrinsically delaying the transmission of the stored packets until validation is completed in order to process the packets, the DTMF signal is coded for transmission comprising the DTMF signal characteristics. See column 5, lines 42-46 and 65-67,) *and if the flag bit indicative of the status of detection of a potential DTMF signal is reset and a flag bit indicative of the detection of a valid DTMF signal is not set, the stored packets are promptly coupled to the network interface for transmission over the network* (Referring to Figure 7, when no DTMF signal is pre-detected the voice traffic is transmitted after a delay, which inherently comprises preparing the signal for transmission. See column 5, lines 61-62,) *and if a flag bit indicative of the detection of a valid DTMF signal is set, the stored packets are discarded and a control packet is prepared by the micro controller where the control packet contains information indicative of characteristics of a DTMF signal and the control packet is coupled to the network interface for transmission over*

the network (Referring to Figures 2 and 9b, after the DTMF Detector **(203)** has determined that a candidate DTMF signal is a true DTMF signal, the DTMF signal is coded for transmission, comprising the DTMF signal characteristics. See column 5, lines 42-46 and 65-67.) Arnaud does not disclose *RTP packets* and *an IP network.*

Kozdon teaches placing the compressed telephone signals and codes representing the DTMF onto virtual channels of a real time protocol (RTP) data stream (See column 5, lines 11-15.) Kozdon further teaches transmitting voice signals, digitally packetized, on a computer network **112** such as the Internet (See column 5, lines 9-10.)

It would have been obvious to one of ordinary skill in the art at the time the invention was made to implement the method of Arnaud in the system of Kozdon. One of ordinary skill in the art would have been motivated to do so in order to transmit real time protocol traffic and DTMF signals with only features essential for reconstituting the DTMF signal in an IP network as taught by Arnaud (See column 4, lines 20-21.)

Regarding claims 20 and 21 as explained above in the rejection statement of claim 19, Arnaud and Kozdon disclose all of the claim limitations of claim 19 (parent claim). Arnaud further discloses a method and apparatus for transmitting DTMF signals, which comprises:

A second network interface coupled to the network at a remote location (Referring to Figure 2, a Receiver Interface **(207)** receives incoming packets at the other side of the network, inherently comprising a network interface in order to receive packets. See column 5, lines 53-54.)

A second microcontroller coupled to the second network interface (Referring to Figure 2, voice decompression system **(208)** decompresses voice packets. See column 5, lines 56-57.)

A digital-to-analog converter coupled to the second microcontroller for converting digital representations of audio signals to analog signals (Referring to Figure 2, voice signal is sent to the end user, inherently comprising a D/A converter controlled by a processor. See column 5, lines 58-60.)

A DTMF signal generator coupled to the second microcontroller for generating (Claim 20)/A second digital processor operative to generate DTMF signals having characteristics determined by information contained in the control packets (Claim 21) (Referring to Figure 2, the corresponding DTMF packets are sent to a DTMF generator **(209)** then sent to the end user, which inherently comprises a processor to process packets. See column 5, lines 54-60.) Arnaud does not disclose *RTP packets* or *IP network.*

Kozdon teaches placing the compressed telephone signals and codes representing the DTMF onto virtual channels of a real time protocol (RTP) data stream (See column 5, lines 11-15.) Kozdon further teaches transmitting voice signals, digitally packetized, on a computer network **112** such as the Internet (See column 5, lines 9-10.)

It would have been obvious to one of ordinary skill in the art at the time the invention was made to implement the method of Arnaud in the system of Kozdon. One of ordinary skill in the art would have been motivated to do so in order to transmit real time protocol traffic and DTMF signals with only features essential for reconstituting the DTMF signal in an IP network as taught by Arnaud (See column 4, lines 20-21.)

3. Claims 11-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Arnaud et al. (US 6,650,662 B1), herein after referred to as Arnaud, in view of Kozdon et al. (US 6,385,192 B1), hereinafter referred to as Kozdon, further in view of Schulzrinne (ietf-avt-dtmf-01.txt).

Regarding claim 11 as explained above in the rejection statement of claim 1, Arnaud discloses all of the claim limitations of claim 1 (parent claim). Arnaud does not disclose *when the potential DTMF signal does result in a DTMF detection, preparing a control packet comprising 32 bits of information having a format of: RRRNNNNNRRVVVVVVDDDDDDDDDDDDDDDD where "R" designates reserved bits; "N" designates bits of data representative of a DTMF digit; "V" designates bits of data representing the power level of the DTMF signal, expressed in dBm0 after dropping the sign; and "D" designates bits of data indicating a duration for a DTMF signal, in timestamp units.*

Schulzrinne teaches a payload format 32-bits long which comprises five reserve bits, five bits for DTMF digit encoding, six bits for volume or power level, and sixteen bits for duration in timestamp units (See pages 2-3.)

It would have been obvious to one of ordinary skill in the art at the time the invention was made to implement RTP payload for DTMF digits of Schulzrinne in the system of Kozdon utilizing the method of Arnaud. One of ordinary skill in the art would have been motivated to do so in order to support DTMF digits in RTP packets as taught by Schulzrinne (See page 1, paragraph 4.)

Regarding claim 12 as explained above in the rejection statement of claim 1, Arnaud discloses all of the claim limitations of claim 1 (parent claim). Arnaud does not disclose *the "N"*

bits of data representative of a DTMF digit are encoded so that the following encoded data represents the indicated DTMF digit:

An encoded "0" represents a DTMF digit of 0

An encoded "1" represents a DTMF digit of 1

An encoded "2" represents a DTMF digit of 2

An encoded "3" represents a DTMF digit of 3

An encoded "4" represents a DTMF digit of 4

An encoded "5" represents a DTMF digit of 5

An encoded "6" represents a DTMF digit of 6

An encoded "7" represents a DTMF digit of 7

An encoded "8" represents a DTMF digit of 8

An encoded "9" represents a DTMF digit of 9

*An encoded "10" represents a DTMF digit of **

An encoded "11" represents a DTMF digit of #

An encoded "12" represents a DTMF digit of A

An encoded "13" represents a DTMF digit of B

An encoded "14" represents a DTMF digit of C

An encoded "15" represents a DTMF digit of D

Schulzrinne teaches a payload format 32-bits long which comprises five bits for DTMF digit encoding wherein an encoded 0-15 corresponds to 0-9, *, #, and A-D respectively (See page 3.)

It would have been obvious to one of ordinary skill in the art at the time the invention was made to implement RTP payload for DTMF digits of Schulzrinne in the system of Kozdon utilizing the method of Arnaud. One of ordinary skill in the art would have been motivated to do so in order to support DTMF digits in RTP packets as taught by Schulzrinne (See page 1, paragraph 4.)

Regarding claim 13 as explained above in the rejection statement of claim 1, Arnaud discloses all of the claim limitations of claim 1 (parent claim). Arnaud does not disclose *an encoded "16" represents a Flash.*

Schulzrinne teaches a payload format 32-bits long which comprises five bits for DTMF digit encoding wherein an encoded 16 corresponds to Flash (See page 3.)

It would have been obvious to one of ordinary skill in the art at the time the invention was made to implement RTP payload for DTMF digits of Schulzrinne in the system of Kozdon utilizing the method of Arnaud. One of ordinary skill in the art would have been motivated to do so in order to support DTMF digits in RTP packets as taught by Schulzrinne (See page 1, paragraph 4.)

Regarding claims 14-16 as explained above in the rejection statement of claim 1, Arnaud discloses all of the claim limitations of claim 1 (parent claim). Arnaud does not disclose *wherein the reserve bits are set to zero.*

Schulzrinne teaches a payload format 32-bits long which comprises five reserve bits, which are set to zero (See pages 2-3.)

It would have been obvious to one of ordinary skill in the art at the time the invention was made to implement RTP payload for DTMF digits of Schulzrinne in the system of Kozdon

utilizing the method of Arnaud. One of ordinary skill in the art would have been motivated to do so in order to support DTMF digits in RTP packets as taught by Schulzrinne (See page 1, paragraph 4.)

Response to Arguments

4. Applicant's arguments filed February 17, 2004 have been fully considered but they are not persuasive regarding claims 1-21.

Rejection under 35 USC § 102(e)

On page 20 of the remarks, regarding claims 1, 5, and 8, Applicant argues that Arnaud does not disclose "stalling transmission of stored digital packets until DTMF detection can be performed." Examiner respectfully disagrees. Arnaud discloses "stalling transmission of stored digital packets until DTMF detection can be performed" when the DTMF detector **(203)** detects and validates DTMF signals (See column 5, lines 26-28.) The DTMF detector intrinsically delays the transmission of the stored packets while performing the DTMF validation process (See Figure 12 and column 13, line 30.)

Rejection under 35 USC § 103(a)

On page 23 of the remarks, regarding claims 2-4, 6, 7, 9, and 10-21, Applicant argues that Arnaud does not disclose "stalling transmission of stored digital packets until DTMF detection can be performed." Examiner respectfully disagrees for the same reasons stated above in conjunction with claim 1.

5. Applicant's arguments, see amendment and declaration, filed February 17, 2004 with respect to the rejection of claims 22-81 under 35 USC § 102(e) have been fully considered and

are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground of rejection is made in view of Arnaud et al. (US 6,650,662 B1).

Conclusion

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Donald L Mills whose telephone number is 703-305-7869. The examiner can normally be reached on 8:00 AM to 4:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hassan Kizou can be reached on 703-305-4744. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Donald L Mills

April 8, 2004

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